

## Installation Instructions

### Credentials for LR-2000 Long-Range Reader

#### Change History

Version	Date	Author	Comments
1.2	20 Nov 2008	LHH	First release.

*The tags and cards for AWID's LR-2000 Long-Range Reader are easily mounted or hand-held using the following instructions. It is important that the installer follows these suggestions. Contact AWID's Technical Support for applications and installation advice.*

#### GENERAL RULES

1. The relationship between the *reader's* location and aiming, and the location of the *credentials* (cards or tags) inside or outside the vehicle, is important for good performance. Plan the installation considering these factors before installation starts.
2. Start by testing the LR-2000 reader using the LR-2000KIT's test unit and the hand-held test credentials, with no vehicle present at the reader. When good read range has been proved, proceed to mounting the cards and tags in or on the vehicles.
3. The "*sweet spot*" reading distance for a credential in or on the vehicle is 9 feet, 10 feet or 15 feet, measured between the face of the reader and the location of the credential. Note: This reading distance is shorter than the credential's "*read range*", which is the total distance between the reader and the farthest point at which a hand-held credential can be detected.
4. At the sweet spot, the credential should *face the reader*, with clear *line-of-sight* (through the windshield is OK) to the reader, and with the credential and the reader about *parallel to each other*. Aim the reader at the sweet spot.
5. Orientation of a credential may be "portrait" or "landscape" or diagonal. Reading may be most active when either *long edge* of the credential is closest to the reader as the tag approaches the sweet spot.
6. Keep your hand and body away from the cards and tags, to avoid blocking or reducing the card's or tag's RF field.
7. Before attaching WS-UHF tags to the windshield, clean the windshield near the tag, inside and outside.
8. To attach tags to side windows, select a window that does not lower into the door frame. Align tags with a reader at the side of the vehicle lane, at the same height as the tags.
9. If necessary, turn off RF sources on the vehicle, such as anti-collision sensors and UHF communications gear.
10. Prevent buildup of snow over the tags. Use windshield wipers to remove water from the windshield. Near the ocean, wash the windshield near the credential to remove salt coating.
11. Prepare instructions for the users' staff member who will oversee tag installation. Copy the suggestions in the section below for the appropriate card or tag. From the LR-2000 Installation Manual, copy the sub-section in Section 9 – Applications that matches this installation.

#### VT-UHF-0-0 VISOR TAGS

1. Mount the reader, usually over the driver's side of the vehicle, or at the left side of the lane.
2. With the visor raised, clip the tag over the upper edge of the visor. The tag faces the driver.
3. As the vehicle approaches the reader's "sweet spot", lower the visor so that the tag faces the reader through the windshield. The tag should then be about parallel to the reader.
4. When the gate or door operation starts, swing the visor back to its raised position.



### HT-UHF-0-0 HANGTAGS

1. Typical locations -- For a hanging tag, mount the reader over the center of the lane. For a hand-held tag, mount the reader at the left side of the lane.
2. Hook the hangtag over the stem that fastens the inside rearview mirror to the windshield. Either side of the hangtag may face the windshield.
3. The hangtag may be read either by leaving the tag hanging from the mirror's stem, or by holding the tag between the fingers at the hook-end of the tag, with the tag facing the reader.



### CS-UHF-0-0 CLAMSHELL BADGE and GR-UHF-0-0 GRAPHICS CARD

1. Mount the reader so that it faces the card when the driver holds it in the sweet spot.
2. Present the card to the reader. Keep your fingers at the edges of the card, and your hand behind the card. Hold the card parallel to the face of the reader.



### RV-UHF-0-0 REARVIEW MIRROR TAG

1. Peel off the label that covers the tag's adhesive backing. Attach the tag firmly to the housing of the inside rearview mirror, facing the windshield, beside the stem that supports the mirror. Choose the side that is closest to the reader's planned location.
2. Mount the reader so that it is aimed at the tags at their "sweet spot". The reader's face should be about parallel to the tags.



### WS-UHF-0-0 WINDSHIELD TAG

1. Mount the reader so that it faces the WS-UHF tag at the "sweet spot" reading location. See Figures 4 and 5 in the LR-2000 Installation Manual for typical uses.
2. Move the vehicle so that the windshield is at the reading distance. Press the plastic-film side of the WS-UHF tag flat against the inside of the windshield. Use a hand-sized block of plastic foam (flexible but firm), about 2 inches thick, to press the tag.
3. Test the tag at different locations inside the windshield. Try high and low, several inches from the vehicle's door pillar, in "portrait" and "landscape" orientation. Avoid embedded wires, metal coating, dark tinting, and RF emitting devices. If the reading distance is too short, use a different AWID UHF card or tag.
4. Peel the plastic film off the tag. Press the tag's adhesive flat against the inside of the windshield. This is a one-time application. The tag will not work after it is pulled from its original position. The tag can not be moved between vehicles.
5. WS-UHF tags will not read if held in the fingers, or carried, or taped, or inserted into a card pouch. It reads only when adhered permanently inside the windshield glass.



### MT-UHF-0-0 METAL-MOUNT TAG

1. Mount the reader so that it faces the MT-UHF tag at the "sweet spot" reading location. See Figure 6 in the LR-2000 Installation Manual for an example at the left side.
2. The MT-UHF tag may be attached on a flat metal surface outside the vehicle. For *temporary* attachment, apply tape over the two screw-holes at the ends of the tag, or use wire-ties. Do not cover the center of the tag between the screw-holes. For *long-term* attachment, peel the paper label from the back of the tag, and adhere the tag to the surface. Or use nylon screws or pop-rivets through the screw-holes.
3. Try vertical and horizontal orientation. On the side of vehicles, vertical orientation may give most consistent reading. At the "sweet spot", the MT-UHF tag and the reader should be about parallel to each other. Fastening a tag on the front license plate *may* be acceptable. Verify performance first using the LR-2000KIT.
4. Test the tag. Then finish installation by snapping the screw-hole plugs in place at the ends of the tag, for security and good appearance.

